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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/609,090	06/27/2003	Joseph Gan	42931B	7578

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THE DOW CHEMICAL COMPANY
INTELLECTUAL PROPERTY SECTION
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EXAMINER	
SELLERS, ROBERT E	
ART UNIT	**PAPER NUMBER**
1712	

DATE MAILED: 06/07/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/609,090	GAN ET AL	
	Examiner	Art Unit	
	Robert Sellers	1712	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *27 June 2003*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *16-25* is/are pending in the application.

4a) Of the above claim(s) *18-25* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☐ Claim(s) _____ is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☒ Claim(s) *16-25* are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☒ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *8/29/2003*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

Restriction to one of the following inventions is required under 35 U.S.C. 121:

I. Claims 16 and 17, drawn to a fiber reinforced composite article comprising a matrix of a polyepoxide, a complex of a catalyst and cure inhibitor, and an anhydride-vinyl compound copolymer cross-linker, classified in class 428, subclass 297.4.

II. Claim 18, drawn to an insulating coating on an electric circuit, classified in class 428, subclass 413.

III. Claim 19, drawn to a process of producing a coated article, classified in class 427, subclass 386.

IV. Claims 20-25, drawn to a composition comprising a crosslinker and a cure inhibitor, classified in class 252, subclass 182.19.

The inventions are distinct from each other because:

1. The fiber reinforced composite article of Group I is a structurally diverse object form the coated electric circuit of Group II.

2. The fiber-reinforced composite article of Group I is produced via a materially different method from the coating process of Group III wherein an impregnation of the fibers with the epoxy resin composition is conducted.

3. The composition of Group IV is useful other than for the preparation of the fiber reinforced article of Group I or the coated electric circuit of Group II, such as the curing of a materially different thermosetting resin from the polyepoxide, such as a phenolic resin or a hydroxyl-functional acrylic resin.

4. Inventions III and II are related as process of making and product made. The inventions are distinct if either or both of the following can be shown: (1) that the process as claimed can be used to make another materially different product or (2) that the product as claimed can be made by another materially different process (MPEP § 806.05(f)). In the instant case, the process as claimed can be used to make another materially different product such as a coated metallic sheet.

Restriction for examination purposes as indicated is proper because these inventions are distinct for the reasons given above and have acquired a separate status in the art as shown by their different classification.

This application contains claims directed to the following patentably distinct species of the claimed invention:

a) The polyepoxides.

b) The complexes of catalysts and cure inhibitors.

c) The anhydride-vinyl compound cross-linkers.

d) The compositions with and without the bifunctional chain extenders of claim 23, wherein if its presence is elected, a particular species is identified.

e) The compositions with and without the accelerators of claim 24, wherein if its presence is elected, a particular species thereof is identified.

f) The compositions with and without the hydroxyl-functional cross-linkers of claim 25, wherein if its presence is elected, a particular species thereof is identified.

Applicant is required under 35 U.S.C. 121 to elect a single disclosed species for prosecution on the merits to which the claims shall be restricted if no generic claim is finally held to be allowable. Currently, claims 16-25 are generic.

A reply to this requirement must include an identification of the species that is elected consonant with this requirement, and a listing of all claims readable thereon, including any claims subsequently added. An argument that a claim is allowable or that all claims are generic is considered nonresponsive unless accompanied by an election.

Upon the allowance of a generic claim, applicant will be entitled to consideration of claims to additional species which are written in dependent form or otherwise include all the limitations of an allowed generic claim as provided by 37 CFR 1.141. If claims are added after the election, applicant must indicate which are readable upon the elected species. MPEP § 809.02(a).

Should applicant traverse on the ground that the species are not patentably distinct, applicant should submit evidence or identify such evidence now of record showing the species to be obvious variants or clearly admit on the record that this is the case. In either instance, if the examiner finds one of the inventions unpatentable over the prior art, the evidence or admission may be used in a rejection under 35 U.S.C. 103(a) of the other invention.

During a telephone conversation with Joe R. Prieto on June 2, 2005, a provisional election was made with traverse to prosecute the invention of Group I and the following species:

a) A diglycidyl ether of bisphenol A.

b) a complex of boric acid and 2-ethyl-4-methylimidazole.

c) A styrene-maleic anhydride copolymer.

The absence of the bifunctional chain extender, accelerator and hydroxyl-functional cross-linker.

Affirmation of this election must be made by applicant in replying to this Office action. Claims 18-25 are withdrawn from further consideration under 37 CFR 1.142(b), as being drawn to non-elected inventions.

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 16 and 17 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The phrase ""can be controllably adjusted to extend the gel time of the resin" in claim 16, lines 13-14 is repetitive with previous line 12.

The amount of cross-linker is unclear in the absence of its basis upon 100 parts of polyepoxide as described on page 41, lines 4-10 of the specification.

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 16 and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over European Patent No. 458,502 and PCT Publication No. 96/12751 in view of Schutyser et al. Patent No. 5,821,305 and Japanese Patent Nos. 9-25349 (Japanese '349) and 9-194610 (Japanese '610) and Soviet Union Patent No. 448,742.

5. The European patent (pages 21-22, Example 8 and page 22, lines 39-45) shows a fiber reinforced composite prepared from the elected species of a diglycidyl ether of bisphenol A, a dicyandiamide curing agent and the product of the elected species of boric acid and 2-methylimidazole. Although only dicyandiamide is exemplified, the European patent is open to curing agents "known to the skilled artisan to react with polyepoxides (page 11, lines 41-42)" including anhydrides (page 11, lines 45 and 49-52).

6. The PCT publication (page 3, lines 14-20) discloses a fiber reinforced composite (page 12, lines 26-29) produced from most preferably a diglycidyl ether of bisphenol A (page 5, line 21), a multifunctional crosslinkers including "known curing agents for epoxy resins such as polyanhydrides (page 8, lines 35 and 36)" and complex (page 7, lines 36-37) of an inhibitor such as the most preferred boric acid (page 7, line 30) and a catalyst such as the even more preferred elected species of 2-ethyl-4-methylimidazole (page 7, lines 3-4).

7. The claimed anhydride-vinyl compound crosslinker is not recited.

8. Schutyser et al. (col. 8, Example 6) shows a fiber reinforced composite derived from a brominated diglycidyl ether of bisphenol A (col. 6, lines 66-67, Epikote 1143B80), a triallyl cyanurate prepolymer (col. 4, line 30, TAC), a calculated amount of 58.6 parts by weight per 100 parts by weight of epoxy resin of a styrene-maleic anhydride copolymer (col. 1, lines 51-52, 879 grams of SMA per 1500 grams of Epikote 1143B80) and 2-methylimidazole.

9. Japanese '349 (page 6, paragraph 33 and paragraph 36, Example 4) shows a fiber reinforced composite obtained from 100 parts by weight of a blend of epoxy resins including a diglycidyl ether of bisphenol A, 41 parts by weight of a styrene maleic anhydride copolymer and 2-ethyl-4-methylimidazole.

10. Japanese '610 (page 6, paragraph 35 and paragraph 38, Example 4) shows a fiber reinforced composite produced from an epoxy resin mixture including a diglycidyl ether of bisphenol A, 49% by weight of a styrene-maleic anhydride copolymer and 2-ethyl-4-methyl-imidazole.

11. The Soviet Union patent teaches a combination of from 5-95% by weight of a styrene-maleic anhydride copolymer and from 5-95% by weight of an epoxy resin.

12. It would have been obvious to employ the styrene-maleic maleic anhydride copolymer of Schutyser et al., the Japanese patents and the Soviet Union patent in order to:

a) Increase the Tg (Schutyser et al., col. 1, lines 18-21).

b) Improve the dielectric characteristics (Japanese '349, page 4, paragraph 20 and Japanese'610, page 3, paragraph 17).

c) Enhance the adhesion, non-deformation and thermal stability (Soviet Union patent).

Claims 16 and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Schutyser et al., Japanese '349 and '610 in view of the European patent and PCT publication.

The references are described in previous paragraphs 5, 6 and 8-10. Schutyser et al. and the Japanese patents do not recite the claimed complexing of the imidazole catalyst with a cure inhibitor.

13. It would have been obvious to complex the imidazole catalysts of Schutyser et al. and the Japanese patents with the boric acid inhibitor of the European patent and the PCT publication such that "the gel time of a resin can be controllably adjusted (European patent, page 4, line 58 to page 5, line 1)" and to inhibit "the activity of the catalyst during B-staging (PCT publication, page 7, lines 23-24).

14. The declaration filed August 28, 2002 in parent application no. 09/008,983 merely confirms that epoxy resin/boric acid duos have different gel times predicated upon the particular crosslinker utilized. It is a matter of ordinary skill in the art that the gel time will vary as a function of the species of cross-linker. More favorable consideration would be given to a comparision between the claimed anhydride-vinyl compound copolymer crosslinker and the closest prior art dicyandiamide in the absence of the inhibitor. If the formulation containing the copolymer without the inhibitor gels faster than that with dicyandiamide, then it would be unexpected for the mixture of copolymer and inhibitor to gel slower than the blend of dicyandiamide and inhibitor.

15. Although Table I (specification, page 48) and Table 3 (page 51) exhibits a faster gel time for Example 3 containing a styrene-maleic anhydride copolymer as compared to Comparative Example 1 with dicyandiamide, it cannot be ascertained whether the difference is solely attributable to the type of crosslinker since the types and amounts of the other components are not held constant.

16. The evidence must be commensurate in scope with the claims. The examples in the specification and declaration merely test a blend of 2-ethyl-4-methylimidazole and boric acid, whereas the claims are limited to a complex. The claims embrace such diverse catalysts as phosphonium complexes, ammonium complexes, mono-, di- and tri-alkyl monoamines, epoxy resin-amine adducts and imidazoles (page 31, line 14 to page 36, line 20).

The claimed inhibitor encompasses myriad species including boric acid, alkyl borates, trimethoxyboroxine and an organic acid having a pKa of from 1-3 such as salicylic acid, oxalic acid and maleic acid (page 36, lines 21-26). The mere testing of a single uncomplexed mixture of an imidazole and boric acid does not indicate the criticality of the broadly claimed catalyst-cure inhibitor complex.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Robert Sellers whose telephone number is (571) 272-1093. The examiner can normally be reached on Monday to Friday from 9:30 to 6:00.

The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at (866) 217-9197 (toll-free).

Robert Sellers
Primary Examiner
Art Unit 1712

rs
6/2/2005